Missouri Department of Natural Resources

Missouri Risk-Based Corrective Action (MRBCA)

Hazardous Waste Program fact sheet 9/2006

The Missouri Department of Natural Resources adopted a risk-based corrective action process, detailed in the *Departmental Missouri Risk-Based Corrective Action Technical Guidance*. This process provides a policy for remediation decisions at contaminated sites. It protects human health and the environment while allowing constructive current and future site use. The adoption of risk-based decision-making was initiated when the department decided to move away from using drinking water standards as the cleanup criteria for contaminated groundwater when the groundwater was not used as drinking water.

Using a risk-based process, site remediation is based on the human health and environmental risk from exposure to contamination rather than the traditional debate of "how clean is clean."

If determined to be safe based upon exposure routes and receptors, contamination may be left in place with appropriate engineering or institutional controls to ensure long-term protection.

A risk-based framework can streamline the process of site cleanup and closure, streamline decision-making and focus finite resources (both private and public) on sites with the highest current or potential risks. By adopting a departmental risk-based process that applies to most contaminated sites, the department can provide greater consistency in its decision-making.

Since 1999, the department has worked with stakeholders in the Risk-Based Remediation Rule Workgroup, developing several products to put risk-based decision-making into practice in Missouri. These products are:

Departmental Missouri Risk-Based Corrective Action (MRBCA) Technical Guidance

This department-wide guidance provides a framework for environmental professionals, both in the public and private sectors, for the process, methodologies, and key elements of Risk-Based Corrective Action.

Departmental MRBCA Rules

The department is currently developing Risk-Based Corrective Action rules for adoption.

These rulemakings will involve both the Clean Water Commission (CWC) and the Hazardous Waste Management Commission (HWMC).

Missouri Risk-Based Corrective Action Process for Petroleum Storage Tanks and Tanks MRBCA Rule

The department has published a separate technical guidance for tanks. Rules governing the Tanks risk-based process will also be developed.

PUB002187

History of Risk-Based Corrective Action in Missouri

In 1995, the General Assembly passed House Bill 251, which directed the CWC to use risk-based corrective standards to remediate underground storage tank sites. In 1999, the General Assembly passed Senate Bill (S.B.) 334, which directed the CWC to develop a process to determine if risk-based remediation of groundwater was appropriate for any particular site. Although separate actions, both directives aimed to facilitate risk-based remediation decisions within the department. Later, S.B 901 (signed in 2004) gave regulatory authority for tanks, including authority for risk-based remediation rules, to the HWMC.

In addition, the department's Hazardous Waste Program (HWP) has used *Cleanup Levels for Missouri (CALM) Guidance* for voluntary cleanup of contaminated sites. CALM guidance established a risk-based procedure for site remediation.

In response to the legislative directives and widespread stakeholder interest, the department formed a workgroup, now called the Risk-Based Remediation Rule Workgroup. External stakeholders in this group represent key sectors of Missouri's citizenry, such as industry, private contractors and consultants, citizen organizations and state, federal and local agencies. Before finalizing a rule, the workgroup decided to first develop a policy approach and technical guidance. The Hazardous Waster Program coordinated this effort with input from the department's Water Protection Program, Environmental Services Program, Division of Geology and Land Survey, in addition to the Missouri Department of Health and Senior Services, the U.S. Environmental Protection Agency and a private contractor, RAM Group Inc.

The *Technical Guidance* and related information is located at www.dnr.mo.gov/env/hwp/mrbca/mrbca.htm.

What is the MRBCA process?

A site must first be characterized, which includes identifying what contaminants are on the site, where they are located, and in what amounts. This information is used to identify any risk to human or ecological receptors by comparison to risk-based target values. At each step of the process, the remediating party can choose to remediate or to better define the potential risk.

For site remediation, the remediating party has the option of cleaning up a site to safe levels or managing the risks through technology or institutional controls. Although the remediating party makes this choice, ultimately, the department must ensure that the remediation is protective of human health and the environment.

What is Tiered Evaluation?

Tiered evaluations allow for increasingly refined assessments of risk. At the Tier 1 level, target levels are calculated based upon various exposure scenarios. The department used reasonable exposure scenarios to develop these numbers, rather than use the most stringent and conservative scenarios. At the end of a Tier 1 Risk Assessment, if the contaminant levels at the site exceed the calculated values (called Risk Based Target Levels or RBTLs), then the remediating party has the following options: Clean up to the RBTL, manage the risk through development of a risk management plan, or perform a Tier 2 or Tier 3 Risk Assessment to better define the risk.

- Tier 2 Risk Assessment allows the development of site-specific target levels based upon many of the actual characteristics of the site.
- Tier 3 Risk Assessment allows more flexibility in managing risk at a contaminated site and in development of target levels.

What is the Default Target Level?

Default Target Levels (DTLs) are a compilation of the lowest risk-based contaminant concentrations, developed at MRBCA Tier 1, for any exposure route. For example, for any particular chemical, if the target level for the exposure pathway for ingestion of surficial soil is the lowest target level of all pathways, then the value for that pathway will be shown in the DTL table. Because that value is the lowest of all exposure pathways, the remediating party must characterize the entire site, but does not need to determine exposure paths and receptors if the maximum concentrations are below the DTLs.

What is the policy framework behind MRBCA?

- Provide Default Target Levels
- Employ a three-tiered approach, with the first tier providing standard clean-up levels and approaches and progressing to more site-specific cleanup decisions
- Cover all environmental media - surface and ground water and soil
- Determine all exposure pathways, including an evaluation of groundwater use
- Provide for ecological risk evaluation
- Use institutional controls and activity and use limitations to ensure long term stewardship
- Provide technical guidance on the process, methodologies and key elements of the

Risk-based Corrective Action framework

- Allow for existing administrative requirements under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), Resource Conservation and Recovery Act (RCRA), and other federally mandated programs.

What is the difference between CALM and MRBCA?

In most respects, these processes are quite similar. However, some specific differences are:

- MRBCA outlines a clear process for conducting a risk assessment, which was not available in CALM.
- MRBCA outlines a process for consideration of ecological risk, which, although it was considered under CALM, did not contain a specific process for doing so.
- MRBCA provides additional information that will facilitate cleanups. For example, it provides risk-based clean-up levels for contaminants that do not have Maximum Contaminant Levels (MCLs), which are the accepted cleanup levels for contaminants in drinking water.
- MRBCA clearly allows for the use of alternative groundwater cleanup values if drinking water is not a complete pathway.
- MRBCA uses more up-to-date information (for example, the most recent information on chemical toxicity).

- MRBCA incorporates advances in scientific knowledge. For example, the risk due to indoor inhalation of contaminants from underground sources is evaluated in MRBCA; it was not considered in CALM because of the lack of scientific knowledge of this pathway when CALM was developed.

Although CALM has been updated in the past, MRBCA is the next and most current generation of risk-based remediation.

For More Information

Missouri Department of Natural Resources
Hazardous Waste Program
P.O. Box 176
Jefferson City, MO 65102-0176
1-800-361-4827 or (573) 751-3176
www.dnr.mo.gov/env/hwp/index.html